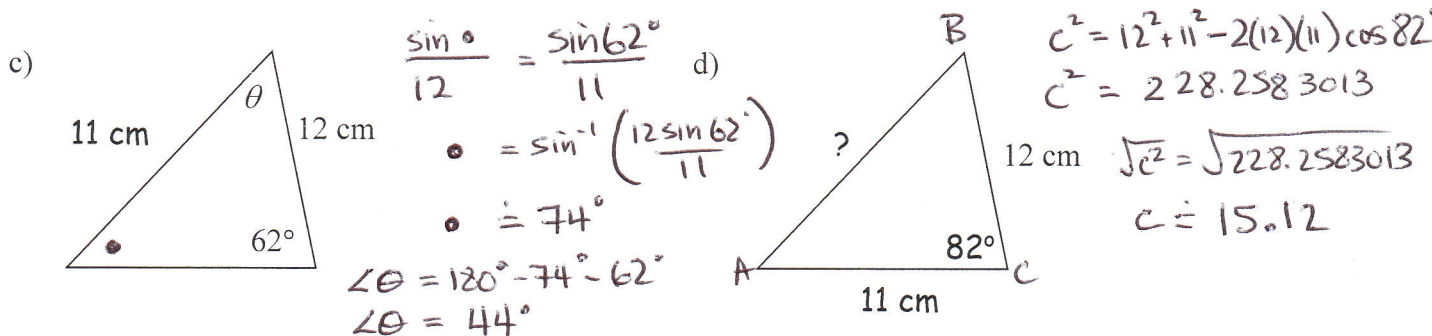
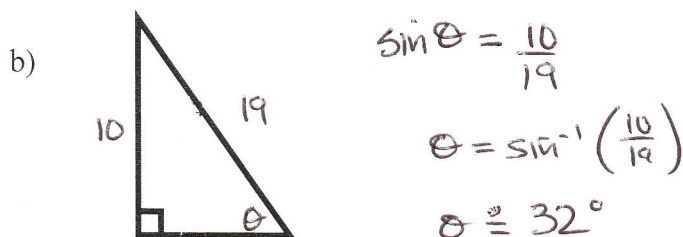
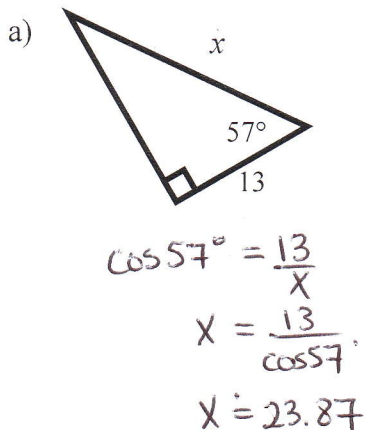


Exam Review #2

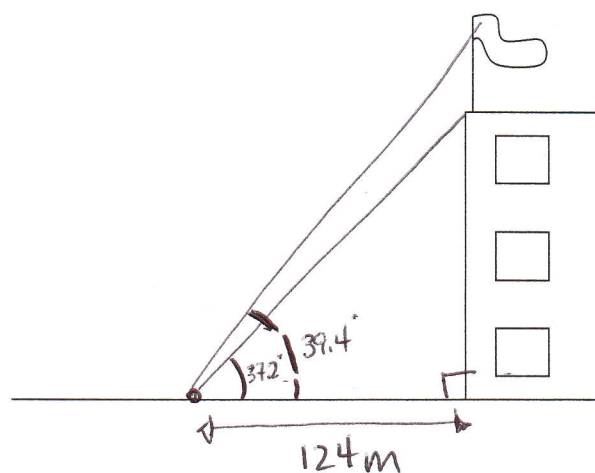
1. Calculate the unknown values



2. From a point 124 m from the foot of a building, the angles of elevation of the top and bottom of a flagpole, are 39.4° and 37.2° . Find the height of the flagpole.

$\tan 37.2^\circ = \frac{x}{124}$
 $x = 124 \tan 37.2^\circ$
 $x \approx 94.12$

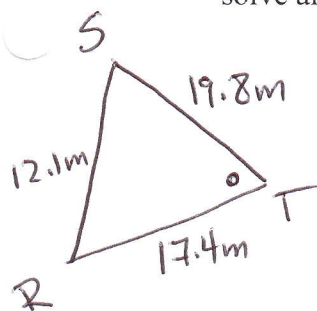
$\tan 39.4^\circ = \frac{y}{124}$
 $y = 124 \tan 39.4^\circ$
 $y \approx 101.85$



$\text{flag pole} = 101.85 - 94.12$
 $= 7.73$

\therefore the height of the flag pole is 7.73 m.

3. Given the side lengths of triangle RST, where R is 19.8m, S is 17.4m, and T is 12.1m, solve all angles?



$$\cos T = \frac{19.8^2 + 17.4^2 - 12.1^2}{2(19.8)(17.4)}$$

$$T = \cos^{-1}(0.79587542)$$

$$T \approx 37^\circ$$

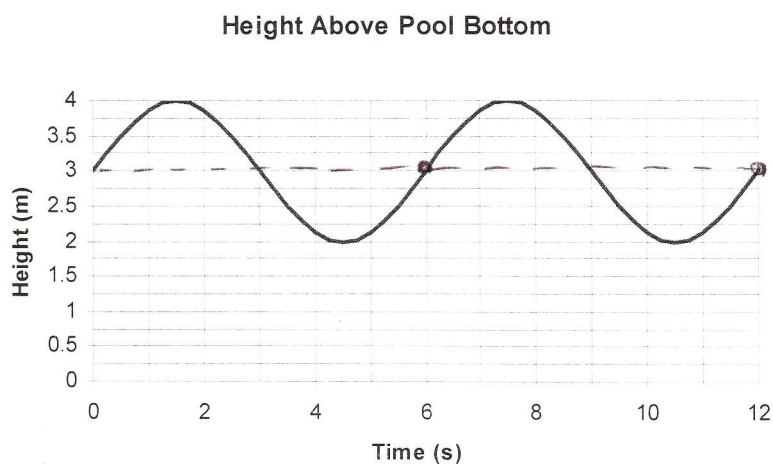
$$\frac{\sin S}{17.4} = \frac{\sin 37^\circ}{12.1}$$

$$\sin S = \frac{17.4 \sin 37^\circ}{12.1}$$

$$S = \sin^{-1}(0.86541995)$$

$$S \approx 60^\circ$$

4. Sarah is sitting in an inner tube in a wave pool. The depth of the water below her in terms of time can be represented by the graph shown.



a) What is the period?

6

b) What is the equation of the axis?

$y = 3$

c) What is the amplitude?

1

d) What is the equation?

$f(x) = \sin 60^\circ x + 3$

5. Complete the following table

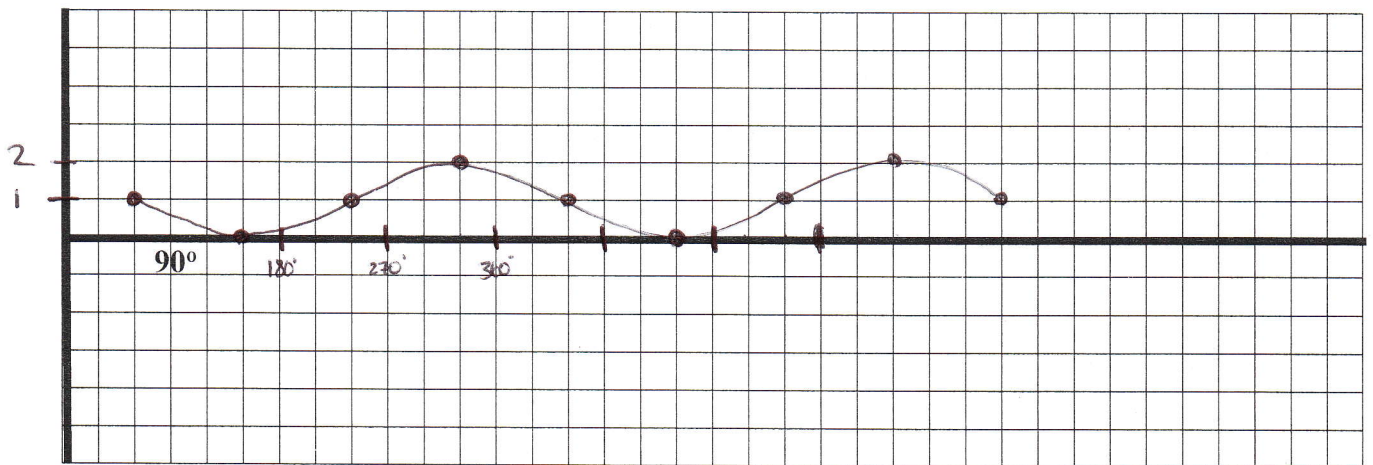
Equation	Transformation	Domain	Range
$f(x) = 5 \sin x$	Vertical stretch by a factor of 5	$\{x x \in \mathbb{R}\}$	$\{y -5 \leq y \leq 5\}$
$f(x) = -1/4 \sin x + 5$	Reflection in the x axis Vertical compression by a factor of 0.25 Vertical shift up by 5	$\{x x \in \mathbb{R}\}$	$\{y 4.75 \leq y \leq 5.25\}$
$f(x) = 2 \sin(x + 20^\circ) + 2$	Vertical stretch by a factor of 2 Horizontal shift left by 20° Vertical shift up by 2	$\{x x \in \mathbb{R}\}$	$\{y 0 \leq y \leq 4\}$

6. Write the new equation if the function $f(x) = \sin x$ undergoes a horizontal translation of 45° , a vertical translation down of 5, has amplitude of 0.5, and is reflected about the x-axis.

$$f(x) = -0.5 \sin(x \pm 45^\circ) - 5$$

7. Graph two periods of the following trigonometric function.

$$g(x) = -\sin(x - 60^\circ) + 1$$



8. Sketch two periods of a sinusoidal function that models a person riding a Ferris wheel. The wheel's axil is 12 m above the ground, its radius measures 14m, and rotates once every 60 seconds. The first point plotted should be when the rider is at his lowest possible height.

